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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/344,169
Filing Date: 6/24/1999
Appellant(s): Corr

Paper # 16

Joseph G. Swan

For Appellant

EXAMINER'S ANSWER

This is in response to the remand of 6/30/2004. The 112(1) rejections have been withdrawn. Support for the feature at issue is to be found on page 5 of the original specification. The 112(2) rejections have also been withdrawn upon further rreflection.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is not agreed with because Appellants attempt to introduce argument and commentary relating to and denigrating the prior art;

(6) Issues

- Appellant's brief refers to objections to the claims and specification as appealable issues. These issues relate to ***petitionable subject*** matter under 37 CFR 1.181 and not to appealable subject matter. See MPEP § 1002 and § 1201.

- The 112 rejections have been withdrawn.

(7) Grouping of Claims

The Appellant's statement in the brief that certain claims do not stand or fall together is not agreed with. Appellants have *merely pointed out differences in what the claims cover*. Section 1200 provides guidance:

(7) Grouping of Claims. For each ground of rejection which appellant contests and which applies to a group of two or more claims, the Board shall select a single claim from the group and shall decide the appeal as to the ground of rejection on the basis of that claim alone, unless a statement is included that the claims of the group do not stand or fall together and, in the argument section of the brief (37 CFR 1.192©(8)), appellant explains why the claims of the group are believed to be separately patentable. ***Merely pointing out differences in what the claims cover is not an argument as to why the claims are separately patentable***. If an appealed ground of rejection applies to more than one claim and appellant considers the rejected claims to be separately patentable, 37 CFR 1.192©(7) requires appellant to state that the claims do not stand or fall together, ***and to present in the appropriate part or parts of the argument under*** 37 CFR 1.192©(8) the reasons why they are considered separately patentable. The absence of such a statement ***and argument*** is a concession by the applicant that, if the ground of rejection were sustained as to any one of the rejected claims, it will be

equally applicable to all of them. 37 CFR 1.192©(7) is consistent with the practice of the Court of Appeals for the Federal Circuit indicated in such cases as In re Young, 927 F.2d 588, 18 USPQ2d 1089 (Fed. Cir. 1991); In re Nielson, 816 F.2d 1567, 2 USPQ2d 1525 (Fed. Cir. 1987); In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986); and In re Sernaker, 702 F.2d 989, 217 USPQ 1 (Fed. Cir. 1983). 37 CFR 1.192©(7) requires the inclusion of reasons in order to avoid unsupported assertions of separate patentability. The reasons may be included in the appropriate portion of the "Argument" section of the brief. For example, if claims 1 to 4 are rejected under 35 U.S.C. 102 and appellant considers claim 4 to be separately patentable from claims 1 to 3, he or she should so state in the "Grouping of claims" section of the brief, and then give the reasons for separate patentability in the 35 U.S.C. 102 portion of the "Argument" section (i.e., under 37 CFR 1.192© (8) (iii)). In the absence of a separate statement that the claims do not stand or fall together, the Board panel assigned to the case will normally select the broadest claim in a group and will consider only that claim, even though the group may contain two broad claims, such as "ABCDE" and "ABCDF.". The same would be true in a case where there are both broad method and apparatus claims on appeal in the same group. ***The rationale behind the rule, as amended, is to make the appeal process as efficient as possible***. Thus, while the Board will consider each separately argued claim, the work of the Board can be done in a more efficient manner by selecting a single claim from a group of claims when the appellant does not meet the requirements of 37 CFR 1.192©(7). It should be noted that 37 CFR 1.192©(7) requires the appellant to perform two affirmative acts in his or her brief in order to have the separate patentability of a plurality of claims subject to the same rejection considered. The appellant

must (A) state that the claims do not stand or fall together and (B) present arguments why the claims subject to the same rejection are separately patentable. Where the appellant does neither, the claims will be treated as standing or falling together. Where, however, the appellant (A) omits the statement required by 37 CFR 1.192(c)(7) yet presents arguments in the argument section of the brief, or (B) includes the statement required by 37 CFR 1.192(c)(7) to the effect that one or more claims do not stand or fall together (i.e., that they are separately patentable) yet does not offer argument in support thereof in the "Argument" section of the brief, the appellant should be notified of the noncompliance as per 37 CFR 1.192(d). Ex parte Schier, 21 USPQ2d 1016 (Bd. Pat. App. & Int. 1991); Ex parte Ohsumi, 21 USPQ2d 1020 (Bd. Pat. App. & Int. 1991).

Appellants have never previously argued the claims as other than a single group. Furthermore, Appellants have provided not presented any rationale or explanation for their grouping in the sections entitled "Grouping of Claims" or in "Arguments". In the "Arguments" section, Appellants have essentially only *recited the prior art teaching* followed by a *recitation of the claims* without pointing out the *patentable distinction.* Therefore, the Examiner considers the claims as a *single group.*

Furthermore, the Appellant's statement in the brief that certain claims do not stand or fall together is not agreed with because Appellants assert an exception to their grouping, wherein the grouping depends upon the outcome of the Appeals process.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

5,983,006	Carlson et al.	11-1999
5,596,506	Petschauer et al.	1-1997

GAO et al. "Minimum cross-talk channel routing." IEEE Trans. Computer-aided design of integrated Circuits and Systems, Vol. 15, issue 5, (May 1996), pp. 465-474.

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

- Claims 1-16 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Gao et al. or Petschauer et al..

- Claims 1-16 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Carlson et al..

(11) Response to Argument

Appellant's brief presents arguments relating to objections to the claims and specification. These issues relate to ***petitionable subject*** matter under 37 CFR 1.181 and not to appealable subject matter. See MPEP § 1002 and § 1201.

Response to Argument - Petitionable Matter - Objection to the Claims

This is a non-appealable issue. Claims 1-16 are objected to because of the following.

- claims 9-10 refer to "pertubation" coupling (perturb a given wire, for example). This does not appear to be a standard term in the art. Its meaning, in the context of the invention is unknown, and should be reworded. The Examiner suggested the recitation "***electromagnetic*** coupling" in paper # 10. Appellants argue that it is indeed electromagnetic coupling (page 5, Appeal Brief). Examiner and Appellants are in agreement - however, this should be reflected in the claims. The Examiner, respectfully, does not understand Appelants' reluctance to clearly claim that which they regard/argue as their invention.
- Claim 6 is objected to under 37 CFR 1.75c, as being of improper dependent form for failing to further limit the subject matter of a previous claim. Claim 6 is functionally identical to claims 1 and 3. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Functionally, Claim 6 indicates that no effects (*likely, possible or unlikely to affect timing*) are to be taken into account. Limitation 6 of claim 1 is inoperative under such a condition. Appellants argue (first paragraph, page 6, Appeal Brief) that:

  "In other words, according to claim 6, the selected mode is such that no modification is performed in step (6) of claim 1. Thus, claim 6 is believed to further limit claim 1 and 3"

The Examiner, respectfully, is not persuaded by this and subsequent reasoning.

- the claims recite *allowing* a user to select a mode of operation. The claims should recite that a user *actually selects* a mode of operation. Appellants arguments are, respectfully, confusing and not persausive.

Response to Argument - 102 Rejections

Claims 1-16 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Gao et al. or Petschauer et al..

Gao et al. disclose "*Minimum crosstalk channel routing.*" They further disclose that as technology advances, interconnection wires are placed in closer proximity and circuits operate at higher frequencies. Consequently, reduction of crosstalk between interconnection wires becomes an important consideration in VLSI design. In this paper, they study the gridded channel routing problem with the objective of satisfying crosstalk constraints for the nets. They propose a new approach to the problem which *utilizes existing channel routing algorithms and improves upon the routing results by permuting the routing tracks. The permutation problem is proven to be NP-complete.* A novel mixed ILP formulation and effective procedures for reducing the number of variables and constraints in the mixed ILP formulation are then presented. *Gao et al.* further disclose determining whether a line is critical (page 465, col. 1); crosstalk constraints and "ranking" of critical conductors (page 465, col. 2, first full paragraph; page 466, section II, first paragraph); ranking and routing the channels (page 465, col. 2, second paragraph to end of section I, page 466; page 466, section II, first and second paragraphs); and track permutations (page 467, col. 1, last paragraph to page 470, end of section IV) and timing slack (pg. 472, col. 2 to pg 473.

Petschauer et al. disclose a method according to the present invention, an integrated circuit chip is fabricated by the following steps:

1) providing a trial layout in the chip for a victim net and a set of aggressor nets which have

segments that lie next to the victim net;

2) assigning to the trial layout of the victim net, the parameters of a line capacitance, a line resistance, and a driver output resistance; and assigning to the trial layout of each aggressor net, the parameters of a coupling capacitance to the victim net, and a voltage transition;

3) estimating, for each aggressor net, a respective peak crosstalk voltage V.sub.p which the aggressor net couples into the victim net as a function V.sub.p =K(e.sup.-X -e.sup.-Y) where K, X, and Y are products of said parameters;

4) modifying said trial layout and repeating the assigning and estimating steps until a summation of the estimated peak crosstalk voltages in the victim net is within an acceptable level; and,

5) building the chip with the modified layout for which the summation is within the acceptable level.

See particularly: fig. 1 (topology), fig. 5a-6 (influence of switching rate on crosstalk - grouped), fig. 8 (margin), fig. 11 (aggressor transitions), fig. 19, 25 (grouping).

Claims 1-16 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Carlson et al..

Carlson et al. disclose a method for analyzing cross-coupling between an attacker signal line, upon which an attacker signal resides, and a victim signal line, upon which a victim signal resides. The method in the present invention comprises the acts of selecting the victim signal, selecting the attacker signal, performing timing filtering on a plurality of signal lines to identify a first set of potential attacker signals on a first set of potential attacker signal lines, performing

logic filtering on the plurality of signal lines to identify a second set of potential attacker signals on a second set of potential attacker signal lines, and reducing the effects of the cross-coupling between at least one of the said potential attacker signal lines and the victim signal line.

In particular, Carlson et al. (Fig. 1, 3-5, 7 and corresponding text) discloses timing delay prediction; determine electromagnetic coupling between aggressor and victim wires; group the aggressor wires as a function of timing; adjust timing margin so that coupling does not affect circuit switching; take into account signal strengths (claim 2); group aggressor wires into likely, possible, unlikely; consider only likely; consider only likely and possible; scaling the aggressor wires (claim 7).

Applicant's arguments are not persuasive. Applicant's basic argument appears to be that while the art "...discloses crosstalk, delay prediction, and/or routing", it does not disclose categorizing the crosstalk interaction into likely, possible or unlikely to cause crosstalk. ***The Examiner respectfully submits that Applicants have not specifically addressed the sections of the prior art as indicated in the prior art rejections.***

Gao et al. disclose determining whether a line is critical (page 465, col. 1); crosstalk constraints and "ranking" of critical conductors (page 465, col. 2, first full paragraph; page 466, section II, first paragraph); ranking and routing the channels (page 465, col. 2, second paragraph to end of section I, page 466; page 466, section II, first and second paragraphs); and track permutations (page 467, col. 1, last paragraph to page 470, end of section IV) and timing slack (pg. 472, col. 2 to pg 473.

Petschauer et al. disclose a method according to the present invention, an integrated circuit chip

is fabricated by the following steps: 1) providing a trial layout in the chip for a victim net and a set of aggressor nets which have segments that lie next to the victim net; 2) assigning to the trial layout of the victim net, the parameters of a line capacitance, a line resistance, and a driver output resistance; and assigning to the trial layout of each aggressor net, the parameters of a coupling capacitance to the victim net, and a voltage transition; 3) estimating, for each aggressor net, a respective peak crosstalk voltage V.sub.p which the aggressor net couples into the victim net as a function V.sub.p =K(e.sup.-X -e.sup.-Y) where K, X, and Y are products of said parameters; 4) modifying said trial layout and repeating the assigning and estimating steps until a summation of the estimated peak crosstalk voltages in the victim net is within an acceptable level; and, 5) building the chip with the modified layout for which the summation is within the acceptable level. See particularly: fig. 1 (topology), fig. 5a-6 (influence of switching rate on crosstalk - grouped), fig. 8 (margin), fig. 11 (aggressor transitions), fig. 19, 25 (grouping).

Carlson et al. (Fig. 1, 3-5, 7 and corresponding text) discloses timing delay prediction; determine electromagnetic coupling between aggressor and victim wires; group the aggressor wires as a function of timing; adjust timing margin so that coupling does not affect circuit switching; take into account signal strengths; group aggressor wires into likely, possible, unlikely; consider only likely; consider only likely and possible; scaling the aggressor wires.

As per the allegation that the prior art does not disclose categorizing the crosstalk interaction into likely, possible or unlikely to cause crosstalk, the Examiner would also like to point out that a reference anticipates a claim if it discloses the claimed invention such that a skilled artisan could take its teachings combination with his own knowledge of the particular art and be in possession of the invention. *In re Graves*, 36 USPQ2d 1697 (Fed. Cir. 1995); *In re Sasse*, 207 USPQ 107

(CCPA 1980); *In re Samour*, 197 USPQ 1 (CCPA 1978). For example, a skilled artisan knows that the probability that one conductor will electromagnetically perturb a second conductor increases as the distance between the conductors is reduced. This is elementary electromagnetic theory. Merely creating arbitrary (what is the criterion for the categorization?) and artificial categories between likely, possible or unlikely to cause crosstalk is not a patentable step above the prior art teachings. In any case, this is merely routine experimentation in a well known art. See MPEP 2144.05:

> "A. Optimization Within Prior Art Conditions or Through Routine Experimentation Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. □[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.□ In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40/C and 80/C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100/C and an acid concentration of 10%.). See also In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969) (Claimed elastomeric polyurethanes which fell within the broad scope of the references were held to be unpatentable thereover because, among other reasons, there was no evidence of the criticality of the claimed ranges of molecular weight or molar proportions.). For more recent cases applying this principle, see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997). B. Only Result-Effective Variables Can Be Optimized A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the

optimum or workable ranges of said variable might be characterized as routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable.). See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (prior art suggested proportional balancing to achieve desired results in the formation of an alloy)."

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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December 6, 2001

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